Resources Evaluation Newsletter

• Classification • Remote Sensing • Inventory • Analysis •

cof. 2

Copublished and compiled by:
Resources Evaluation Techniques Program
USDA Forest Service
Rocky Mountain Forest and Range Experiment Station
240 West Prospect Street
Fort Collins, Colorado 80526

Copublished and mailing list maintained by:
Division of Resource Inventory Systems
USDI Bureau of Land Management (D-460)
Building 50, Denver Federal Center
Denver, Colorado 80225

REN 2 May 1980

A PROCEDURE TO DEVELOP LOCATION COORDINATES FOR SAMPLE POINTS FROM INVENTORY SAMPLING

by
Robert B. Barnes[1/]

ABSTRACT

A procedure is described for assigning Universal Transverse Mercator (UTM) coordinates to air photo sample points from an extensive resource survey. Two methods for subsequent selection of sample points by coordinate location are mentioned.

INTRODUCTION

The Forest and Rangeland Renewable Resources Planning Act of 1974, other recent legislation, and expanded information needs for planning reveal the need to coordinate forest resource inventory sample information with other map or inventory data on a geographic basis. The availability of map coordinate or digitized data associated with specific resource information provides a cross-walk to other resource data sets, and also allows the plotting or mapping of these data. Digitized data bases allow for the display of resource information for any sampled geographic areas, including those not aligned with any political boundaries. They allow the selection of sample base resource information to fit specifically defined units or management areas. It may be necessary to set a minimum area to prevent the standard error of the estimate from becoming too large.

This paper describes a procedure developed by the Northeastern Forest Experiment Station's Resource Evaluation Work Unit to assign UTM coordinates to its sample locations, and then to select locations that fall within a predefined sample area.

METHODS AND MATERIALS

The coordinate system chosen was the Universal Transverse Mercator grid developed by the military (Dep. Army 1958). This is a rectangular metric grid (Reeves et al. 1975) that is hierarchal and can be subdivided to any level of metric linear measure. The UTM grid is overprinted on all new USGS topographic maps and is becoming the preferred reference system (Reeves et al. 1975).

The digitizing procedure consists of a mechanical transfer of location position for a single photo interpretation (PI) point from an air photo to a topographic map, and subsequent determination and recording of its UTM coordinates. Geometric calculations are made to determine the UTM coordinates for any additional PI points on a photo.

The materials required include:

(1) A series of air photos, of any available scale, with sample points systematically located and marked on each photo.

(2) A series of USGS topographic maps that include the same geographic coverage as the air photos.

(3) A set of UTM grids drawn on clear acetate overlays. A large overlay, to cover an entire topographic map, drawn with a 1000-meter grid, and a small overlay that subdivides a single 1000-meter cell by a 100-meter grid.

(4) A pair of proportional dividers that can be adjusted to the scale ratio between the air photos and the topographic maps.

(5) Tally sheets on which to record photo and PI point location numbers and UTM easting and northing coordinates.

[1/] Research Wildlife Biologist, U.S.D.A. Forest Service, Northeastern Forest Experiment Station, 370 Reed Rd., Broomall, PA 19008.

Many Resource Evaluation (Forest Survey) units, and other public and private groups, use double sampling procedures in their forest resource inventories. The first step is a photo interpretation of sample points on aerial photo coverage of the area of interest. This is followed by the selection, location, and measurement on the ground of a subset of photo-interpreted points. At the Northeast Resource Evaluation unit (Barnard 1978), each air photo used in a state forest survey is systematically marked with several PI points using a fixed geometric grid. The number of points per photo varies with photo scale and the intensity of the sample. A single point is chosen from each photo for determination of sample point location coordinates. The chosen point should be adjacent to some easily recognizable natural or cultural feature, to aid in point identification on and transfer to a topographic map. The point location is transferred to the appropriate map using proportional dividers for accurate placement. The UTM coordinates, to the 100-meter cell, are then determined using the transparent grid overlays. The 1000-meter grid transparency is aligned on the topographic map by the UTM edge ticks found on recent maps. The 100-meter grid is centered on the appropriate 1000-meter cell. UTM easting and northing coordinates are read and recorded to 100 meters. Eventually USGS topographic maps will be overprinted with a 1000-meter UTM grid and coordinates can be determined directly.

The digitizing procedure uses the constant geometric relationship between all the PI points located on each photo to calculate UTM coordinates for all PI points on a photo. The geometric relationship is modeled, based on the distances between photo points and the magnetic orientation of the aerial photo flight line. Once the relationship is established, it is a simple matter to calculate the UTM coordinates for all points on a photo, given the coordinates of any single point. When UTM coordinates have been assigned to all photo points in a data set (county, sample unit, etc.), this information is merged with the interpreted land use codes (Table 1) assigned to each photo point. The point identification number is used as the common element for the merging process. As field locations are a subsample of the photo points, they automatically have UTM location coordinates.

Sampling procedures have been developed to select points from the population of all PI points, using UTM location coordinates as the selection criteria. One procedure selects points within an irregular area (e.g., a watershed), given the boundary coordinates. A second procedure selects points within a circular area, given its center coordinates and radius (e.g., a sawmill and its cost-effective purchasing area). Using northeast Resource Evaluation analysis procedures (Barnard 1978), forest resource statistics can be developed for a sample area selected by these routines. A minimum area is necessary to insure sufficient photo and field sample locations to protect data integrity.

RESULTS

The described digitizing procedure was tested using recent photo coverage for Jefferson County, New York. This county was in the recent Resource Evaluation resurvey of New York State, and air photo coverage of the county was readily available. The coverage is 1:48000 scale B/W photography. As part of the Resource Evaluation survey procedures, 23 PI points were marked on each of the 125 photos that constitute complete county coverage.

All the necessary materials described above were gathered at one place, and the UTM coordinates were determined for one PI point on each of the 125 photos. The end product was a list of the 125 photos with the UTM easting and northing coordinates for one identified point on each photo. The UTM coordinates for the balance of the PI points for the county (approximately 2000 points) were calculated later by computer processing. A final data file was created containing photo number, point number and UTM coordinates for every PI point for the Jefferson County survey. This file can be used to sample for subcounty areas or to map or plot point-level data.

The digitizing process is labor intensive. Once the topographic maps and air photos were aligned in the same order, UTM coordinates were assigned to the 125 photos in about 10 hours. This averages less than 5 minutes per photo. This compares favorably with the labor cost of 5.9 to 8.1 minutes per sample found in a similar test conducted by the Southeastern Forest Experiment Station (Cost 1976). Cost found that determining UTM coordinate locations by hand was reasonably precise, compared to determining the same locations using a coordinatograph and computer. Ideally, several location coordinates should be field-checked by accepted navigational procedures. I feel that this digitizing procedure is an efficient and cost-effective method for assigning location coordinates to survey plots. If it were implemented as standard Survey procedure, the additional location information could greatly expand Resource Evaluation's ability to satisfy data requests from potential users.

LITERATURE CITED

Barnard, J. E. 1978. Example of a specific regional inventory: The United States northeastern double sampling with partial replacement design. Proc. IUFRO. Conf., Bucharest, Romania. p. 620-628.

Cost, N. D. 1976. Accuracy and cost of several methods for geographically locating forest survey sample plots. U.S. Department of Agriculture Forest Service Southeastern Forest Experiment Station Research Note SE-234. 4 p.

Reeves, R. C., A. Anson, and D. Landen (eds.). 1975. Manual of Remote Sensing. Am. Soc. Photogrammetry. Falls Church, Va. 214 p.

U. S. Department of the Army. 1958. Universal Transverse Mercator Grid. TNS-241-8.

PI CODE	LAND USE CATEGORY
21	Forest land, 0 - 100 ft^3 gross volume
22	Forest land, 101 - 600 ft^3 gross volume
23	Forest land, 601 - 1250 ft^3 gross volume
24	Forest land, 1251 - 2000 ft^3 gross volume
25	Forest land, 2001 - 2500 ft^3 gross volume
26	Forest land, 2501 + ft^3 gross volume
31	Forest land (public reserved)
32	Forest land (private reserved - urban land)
37	Forest land (public reserved - Catskill Forest Preserve)
40	Forest land, nonproductive
61	Non-forest (public reserved)
62	Agriculture
63	Rural non-agriculture
64	Right-of-way (transportation and utility)
65	Urban and other (including surface mining)
67	Non-forest (public reserve - Catskill Forest Preserve)
70	Unknown
92	Non-census water

Table 1.--1979 photo-interpretation codes used by the Northeastern Forest Experiment Station, Resource Evaluation Work Unit.

* * * * *

CUSTOMIZED FOREST INFORMATION RETRIEVAL

The Renewable Resources Evalution Unit of the USDA - Forest Service's Southeastern Forest Experiment Station has developed the capability of retrieving and compiling customized forest resource information for any geographic area within the Station territory. Up to 44 standard tables can be generated.

The retrieval method may be for one or more whole counties, retrieval of a circular area centered at a selected point with a specified radius distance in miles, or an irregular boundary or closed traverse without regard to political boundaries.

For more details on the Customized Forest Information Retrieval System (F.I.R.) contact USDA - Forest Service, Southeastern Forest Experiment Station, Renewable Resources Evaluation, P.O. Box 2570, Asheville, North Carolina 28802.

HELP!

The Resources Inventory Techniques Project, Rocky Mountain Forest and Range Experiment Station, is conducting a review of the estimation of phytomass (or biomass) with nondestructive sampling techniques. Included are such methods as open-wire transmission lines, capacitance instruments, beta and microwave attenuation, infrared emitter units, etc.

Any literature or references will be greatly appreciated. Please send to: Meredith J. Morris, Resources Evaluation Techniques Program, Rocky Mountain Forest and Range Experiment Station, 240 West Prospect Street, Fort Collins, Colorado 80526 U.S.A.

CURRENT LITERATURE

Please order directly from sources given (sources in parentheses). In the case of journal articles, contact your local library for availability.

GENERAL

Erickson, David L. 1979. Proceedings: Land use planning workshop; Department of Forestry, Univ. of Kentucky, Lexington, KY 40546, 138 p. Price $5.

Mifflin, Ronald W., and Hilton H. Lysons. 1979. Glossary of forest engineering terms, 24 p. USDA Forest Service, Pacific Northwest Forest and Range Exp. Stn., 809 NE 6th Avenue, Portland, OR 97232.

Shupe, Dorothy G., and Michael K. Barrett. 1979. Forest area and timber statistics for southwestern Utah, 1975-1976. USDA Forest Service Resource Bulletin INT-15. 23 p.

Shupe, Dorothy G., and Michael K. Barrett. 1979. Forest area and timber statistics for central Utah, 1976. USDA Forest Service Resource Bulletin INT-14. 23 p.

Platts, William S. 1979. Including the fishery system in land planning. USDA Forest Service General Technical Report INT-60. 37 p. (All 3 publications from Intermountain Forest and Range Exp. Stn., 507 25th St., Ogden, UT 84401.)

Francis, G. J. 1978. The need for the continuous quantitative and qualitative assessment of the forest resource base and its accessibility. Forestry Commission Research and Development Paper 121. 11 p. (Forestry Commission, Forest Research Station, Alice Holt Lodge, Wrecclesham, Farnham, Surrey, Great Britain.)

Powell, Roger A. 1979. Fishers, population models, and trapping. The Wildlife Society Bulletin. 7(3):149-154.

Eckels, Karen L., and Alan R. Taylor. 1979. Firebase, the wildland fire bibliographic information system. Environmental Management. 3(1):21-27.

Fox, Douglas, Ross J. Loomis, and Thomas C. Green. 1979. Proceedings of the workshop in visibility values. USDA Forest Service General Technical Report WO-18. 153 p.

Poudel, Pramila K. 1979. Capitalization of environmental benefits into property values: Literature review. USDA Forest Service Gen. Technical Report RM-69. 7 p. (Both available from Rocky Mountain Forest and Range Exp. Stn., 240 West Prospect Street, Ft. Collins, CO 80526.)

CLASSIFICATION

Hawk, Glenn M. 1979. Vegetation mapping and community description of a small western cascade watershed. Northwest Sci. 53(3):200-212.

Shimabukuro, Y. E., P. Hernandez Filiho, N. F. Koffler, and S. C. Chen. 1980. Automatic classification of reforested pine and eucalyptus using Landsat data. Photogrammetric Engineering and Remote Sensing 46(2):209-216.

Burton, Timothy A., Gerald E. Gifford, and George E. Hart. 1978. An approach to the classification of Utah mine spoils and tailings based on surface hydrology and erosion. Environmental Geology 2(5): 269-278. (Intermountain Forest Exp. Stn., 507 25th Street, Ogden, UT 84401.)

Brice, James R., and Randall B. Lewis. 1979. Mapping of mussel (unionidae) communities in large streams. American Midland Naturalist. 101(2):454-455.

Franklin, Jerry F. 1978. Chapter 10, wilderness ecosystems. In Wilderness Management. USDA Forest Service Misc. Pub. 1365. p. 190-212. (Pacific Northwest Forest and Range Exp. Stn., 809 NE 6th Avenue, Portland, OR 97232.)

Mead, Roy A., Richard S. Driscoll, and James A. Smith. 1979. Effects of the distribution and canopy cover on classification of ponderosa pine forest from Landsat-1 data. USDA Forest Service Research Note RM-375. 3 p. (Rocky Mountain Forest and Range Exp. Stn., 240 West Prospect Street, Ft. Collins, CO 80526.)

REMOTE SENSING

Alger, Larry A. et. al. 1980. Infrared scanner has uses in forestry. Journal of Forestry. 78(1):29-30.

Greentree, Wallace J., and Robert C. Aldrich. 1976. Evaluating stream trout habitat on large scale aerial color photographs. USDA Forest Service Research Paper PSW 123. 21 p. (Pacific Southwest Forest and Range Exp. Stn., P. O. Box 245, Berkeley, CA 94701.)

Sader, Steven A., and Robert W. Campbell. 1979. Costs and accuracies of tropical land cover mapping using Landsat and medium scale CIR aerial photography: A Costa Rican example. Third Conference on the Economics of Remote Sensing Information Systems, Hyatt-Lake Tahoe. November 6-8, 1979. (Resources Development Associates, P. O. Box 239, Los Altos, CA 94022.)

Miller, Lee D., Kaew Nualchawee, and Craig Tom. 1978. Analysis of the dynamics of shifting cultivation in the tropical forests of northern Thailand using landscape modeling and classification of Landsat imagery. NASA Technical Memo. 79545. 19 p.

Williams, D. L., and L. D. Miller. 1979. Monitoring forest canopy alteration around the world with digital analysis of Landsat imagery. 45 p. (Both publications available from Remote Sensing Center, Texas A & M Univ., College Station, TX 77843.)

Henderson, Floyd M. 1980. Effects of interpretation techniques on land use mapping accuracy. Photogrammetric Engineering and Remote Sensing 46(3):359-367.

Francis, Richard E., and Roger R. Kerbs. 1979. How to build and use a light table camera mount. USDA Forest Service Res. Note RM-378. 2 p. (Rocky Mountain Forest and Range Exp. Stn., 240 West Prospect Street, Ft. Collins, CO 80526.)

INVENTORY

McCoy, E. W., and M. L. Hopkins. 1979. Method of conducting a marketing study. Research and Development Series No. 24, 19 p. (International Center for Aquaculture, Agric. Exp. Stn., Auburn Univ., Auburn, AL 36830.)

Melquist, Wayne, and Maurice G. Hornocker. 1979. Methods and techniques for studying and censusing river otter populations. Technical Report 8, 17 p. (Forest, Wildlife and Range Exp. Stn., University of Idaho, Moscow, ID 83843.)

Kalmbacher, R. S. 1980. A versatile livestock enclosure for pasture research. Rangelands 2(1):19-20.

Anderson, David R. 1979. Guidelines for line transect sampling of biological populations. Journal of Wildlife Management. 43(1):70-78.

Leighton, Frederick A. 1979. An aerial census of bald eagles in Saskatchewan. Journal of Wildlife Management. 43(1):214-216.

Hodges, John I., James G. King, and Fred C. Robards. 1979. Resurvey of the bald eagle breeding population in southeast Alaska. Journal of Wildlife Management. 43(1):219-221.

Floyd, Theodore J., L. David Mech, and Michael E. Nelson. 1979. An improved method of censusing deer in deciduous-coniferous forests. Journal of Wildlife Management. 43(1):258-261.

Wensel, Lee C., Jack Levitan, and Klaus Barber. 1980. Selection of basal area factor in point sampling. Journal of Forestry. 78(2):83-84.

Hanke, Steve H., and Abraham Mehrez. 1979. An optimal sampling procedure for the collection of residential water use data. Water Resources Research. 15(6):1343-1348.

Wiant, Harry V., Jr. 1979. Elementary timber measurements. 134 p. (Vandalia Press, 113 Scenery Drive, Morgantown, WV 26505. Price $10 U. S. and Canada, $11, overseas. Postpaid.) This is a practical book on timber measurements aimed at an audience of forest technician students. Separate chapters deal with simple statistics, measuring trees, measuring volume, cruising, and growth.

Green, Roger H. 1979. Sampling designs and statistical methods for environmental biologists. 257 p. (Price $19.95. John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10016.)

Dahlsten, Donald L. 1979. Evaluation of sparse Douglas-fir moth populations. California Agriculture. 33(5):26-27.

Fisher, William C. 1978. New portable weather instrument shelter performs well. Fire Management Notes. Summer 1978, p. 15-18. (Intermountain Forest and Range Exp. Stn., 507 25th St., Ogden, UT 84401.)

Elam, William W., J. D. Hodges, and H. A. Koelling. 1979. Field measurements of conifer oleoresin viscosity and density. Forest Science. 25:543-546.

Peterson, D. L., and G. L. Rolfe. 1979. Determining sample size in throughfall studies. Forest Science. 25:582-584.

Dixon, Bruce L., and R. E. Howitt. 1979. Continuous forest inventory using a linear filter. Forest Science. 25:675-689.

Dimock Edward J., II. 1978. Cooperative animal damage survey--biological impacts and highlights. In Executive Summaries of the Proceedings of the 1978 Western Forestry Conference. p. 82. (Pacific Northwest Forest and Range Exp. Stn., 809 NE 6th Avenue, Portland, OR 97232.)

Barker, Morris, and Paul Seidel. 1979. Methods for in-season estimation of strength of salmon runs destined for the Puget Sound in 1979. State of Washington, Dept. of Fisheries, Progress Report No. 88 55 p. (State of Washington, Dept. of Fisheries, Room 115, General Administration Building, Olympia, WA 98504.)

ANALYSIS

Cochran, P. H. 1979. Gross yields for even-aged stands of Douglas-fir and white or grand fir east of the Cascades in Oregon and Washington. USDA Forest Service Res. Paper PNW-263. 17 p.

Lovejoy, Bill P., and Hugh C. Black. 1979. Population analysis of the mountain beaver, APLODONTIA RUFA PACIFICA, in western Oregon. Northwest Science 53(2):82-89.

Stanek and State. Equations predicting primary productivity (biomass) of trees, shrubs, and lesser vegetation based on current literature. BC-X-183. (Pacific Forest Research Center, 506 West Burnside Road, Victoria, B. C. CANADA V8Z 1M5.)

Daniels, Richard F., H. E. Burkhart, G. D. Spittle, and G. L. Somers. 1979. Methods for modeling individual tree growth and stand development in seeded loblolly pine stands. Publication FWS-1-79, 50 p. School of Forestry and Wildlife Resources, Virginia (Polytechnic Institute and State University, Blacksburg, VA 24061.)

Daniel, Terry C., Ervin H. Zube, and B. L. Driver. 1979. Assessing amenity resource values. USDA Forest Service Gen. Technical Report RM-68, 70 p.

Clary, Warren P. and William H. Kruse. 1979. Phenology and rate of height growth of some forbs in the southwestern ponderosa pine type. USDA Forest Service Res. Note RM-376.

Patton, David R. 1979. How to use RUN WILD data files stored on microfiche. USDA Forest Service Res. Note RM-377. 2 p. (Rocky Mountain Forest and Range Exp. Stn., 240 West Prospect Street, Ft. Collins, CO 80526.)

NIOBRARA-Missouri fisheries investigations. Neb. Tech. Series No. 5, (Nebraska Game and Parks Commission, P. O. Box 30370, Lincoln, NE 68503.)

* * * * *

MEETINGS, WORKSHOPS, SYMPOSIA

May 21-23, 1980. Sixth Canadian Symposium on Remote Sensing. Halifax, Nova Scotia, Canada. Contact: Thomas T. Alfoldi, Technical Program Chairman, c/o Canada Centre for Remote Sensing, 717 Belfast Road, Ottawa, Ontario, Canada K1A OY7.

June 3-6, 1980. Soils and Machine Processing of Remotely Sensed Data Symposia. $150. Contact: Continuing Education Business Office, Rm. 110, Stewart Center, Purdue University, W. Lafayette, IN 47907.

June 9-13, 1980. Soil Applications of Digital Analysis of Multispectral Data. Contact: Douglas B. Morrison, Purdue/LARS, West Lafayette, IN 47906. Phone: (317)749-2052.

June 9-13, 1980. Remote Sensing Short Course, $695. Contact: Continuing Education Business Office, Rm. 110, Stewart Center, Purdue University, W. Lafayette, IN 47907.

June 15-20, 1980. Third Annual Vegetation Remote Sensing Workshop. Glen Arbor, Michigan. Contact: Prof. Charles Olson, School of Natural Resources, University of Michigan, Ann Arbor, MI 48109. Phone (313)764-1413.

June 16-20, 1980. Forest and Rangeland Inventory Methods. Contact: S. Aree, Letters and Sciences, UC, Extension, 2223 Fulton Street, Berkeley, CA 94720. Phone (415)642-1061.

June 16-20, 1980. Remote Sensing Workshop in Digital Image Processing (VICAR-IBIS). Contact: Dr. Ken Langran, Dept. of Geography and Regional Planning, Western Washington University, Bellingham, WA 98225. Phone: (206)676-3277.

June 23-27, 1980. Terrain Analysis: Interpretation of Aerial Photographs and Images. Sioux Falls, South Dakota. Contact Lisa Underkoffler, Graduate School of Design, Gund Hall L-37, Harvard University, Cambridge, MA 02138. Phone (617)495-2578.

July 13-25, 1980. Fourteenth International Congress of the International Society for Photogrammetry. Hamburg, Germany. Contact: The Secretariate, ISP Congress 1980, c/o Hamburg Messe und Congress GmbH, Congress-Organization, Postfach 302 360, D-2000 Hamburg 36, Federal Republic of Germany.

July 21-25, 1980. Multilevel Sampling Designs for Resource Inventories. $400. Contact: Offices of Conferences and Institutes, W1 Rockwell Hall, Colorado State University, Ft. Collins, CO 80523.

July 21-25, 1980. International Conference on Soil Conservation. Contact: Mrs. P. M. King, National College of Agricultural Engineering, Silsoe, Bedford, England MK45 4DT.

August 2-22, 1980. Remote Sensing of Natural Resources. Blacksburg, Virginia. Summer Intensive Course 5150. Contact Dr. Roy A. Mead, Dept. of Forestry, School of Forestry and Wildlife Resources, Cheatham Hall, Virginia Tech., Blacksburg, VA 24061. Phone (703)-961-5482.

September 9-11, 1980. Joint Midwest Forest Economists/Mensurationists Meeting. Grand Hotel, Mackinac Island, Michigan. Contact: John W. Moser, Dept. of Forestry and Natural Resources, Purdue Univ., West Lafayette, IN 47907.

September 9-11, 1980. Symposium on Freshwater Inflow to Estuaries. San Antonio, Texas. $40. Contact: Myron Webb, Coordinator, Department of Conferences, USM Gulf Park Regional Campus, Long Beach, MS 39560. Phone (601)864-2155.

September 29-October 17, 1980. Landsat Mosaic Workshop (Panama). Contact: Chief, DMA-IAGS Cartographic School, APO Miami, FL 34004.

October 28-30, 1980. Remote Sensing for Resource Management. Kansas City, MO. Contact: Soil Conservation Society of America, 7515 Ankeny Rd., Ankeny, IA 50021.

November 30-December 6, 1980. Arid Land Resource Inventories--Developing Cost Efficient Methods. La Paz, Mexico. An international workshop sponsored by IUFRO, SAF, Mexican Subsecretariat of Forestry and Wildlife, Mexican Assoc. of Professional Foresters, USDA Forest Service, and USDI Bureau of Land Management. Contact: H. Gyde Lund, USDA Forest Service, 240 W. Prospect Street, Ft. Collins, CO 80526.

August 9-14, 1981. "INPLACE" Resource Inventories--A National Workshop. Orono, Maine. Sponsored by Society of American Foresters, Society for Range Management, American Society of Photogrammetry, and University of Maine. Contact: L. O. House, Great Northern Paper Co., Millinocket, ME 04462.

September 6-19, 1981. Seventeenth IUFRO World Congress. Kyoto, Japan. Contact: IUFRO Secretariat, Schônbrun, A-1131 Vienna, Austria.

* * * * *

WANTED--Materials for the Newsletter--feature articles, news items, current literature, and meeting notices. All articles received are to be grammatically and technically correct. Send your material to Resources Evaluation Newsletter, Rocky Mountain Forest and Range Exp. Stn., 240 West Prospect Street, Ft. Collins, CO 80526.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DENVER FEDERAL CENTER
BUILDING 50
DENVER, COLORADO 80225

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF THE INTERIOR
Int 415

* U.S. Government Printing Office: 1980-678-183/338